

Non linear waves on a floating elastic sheet

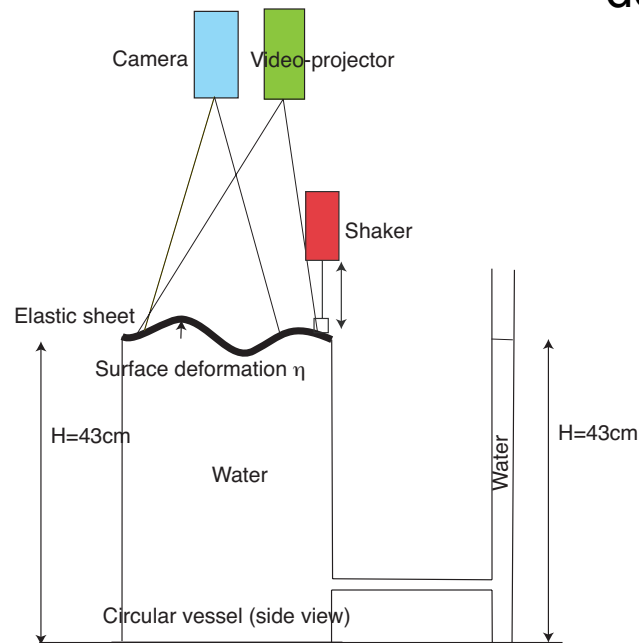
Luc Deike & Eric Falcon

15^e Rencontres du non linéaire, 14-16 mars 2012, Paris



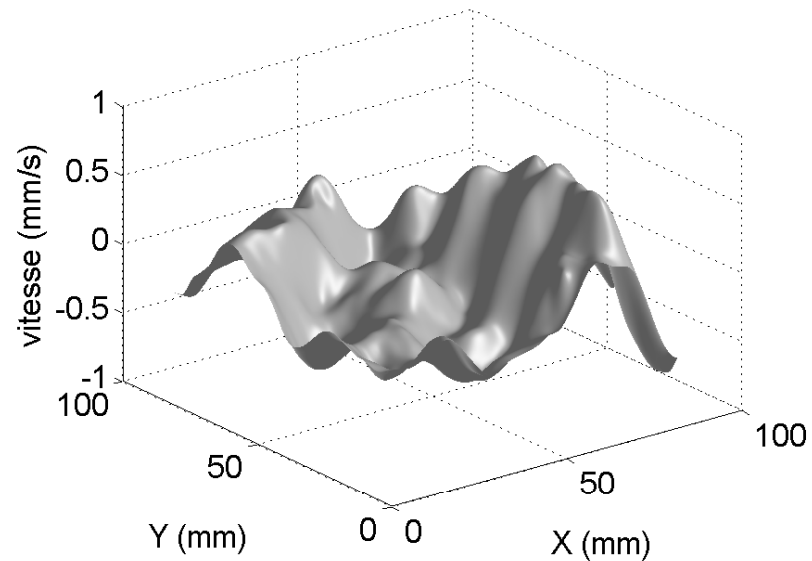
When an elastic sheet is floating, the flexural deformations of the membrane are coupled to the motion of the underneath fluid producing gravito-elastic waves, similar to waves observed in oceanography on floating ice sheets.

Experimental setup

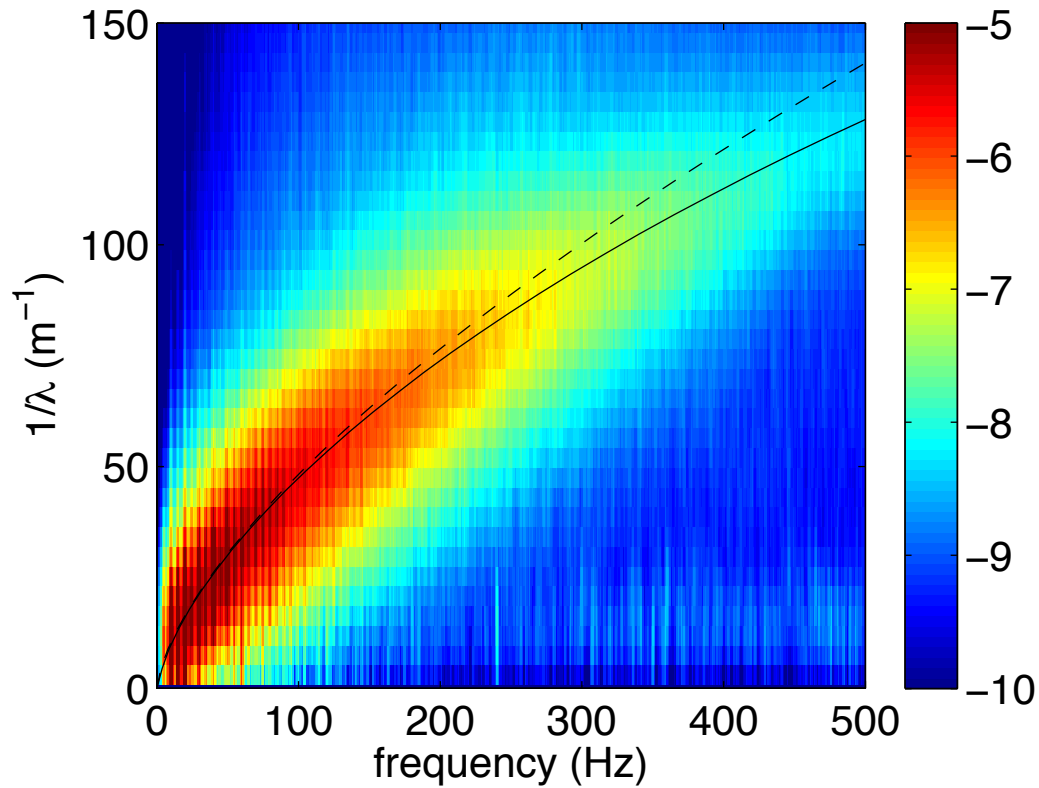


Elastic sheet floating on water,
 paste on the side of the vessel

Spatio-temporal measurement of the surface deformation



Observation propagating waves: Dispersion relation



$$\omega^2 = gk + \frac{T}{\rho}k^3 + \frac{D}{\rho}k^5$$

-> Existence of an effective tension due to the fixation of the membrane

Wave turbulence ?

